

PROF. DANIELA UBIALI, PHD

PERSONAL DATA

Daniela Ubiali

Born: May 23, 1970, Bergamo, Italy

Nationality: Italian

Address: University of Pavia, Dept of Drug Sciences, Via Taramelli 12, 27100, Pavia (Italy)

Contacts: Tel: (+39) 0382-987889 - E-mail: daniela.ubiali@unipv.it

Role: Associate Professor of Chemistry and Biotechnology of Fermentation (SSD CHIM/11)

ORCID: 0000-0003-3528-2960

EDUCATION

1996: Master Degree in Medicinal Chemistry and Pharmaceutical Technology (University of Pavia)

2000: PhD in Medicinal Chemistry and Pharmaceutical Technology (University of Pavia)

ACADEMIC CAREER

2002-2018: Assistant Professor of Medicinal Chemistry and Pharmaceutical Technology (SSD CHIM/08), University of Pavia, Dept of Drug Sciences

2018-onwards: Associate Professor of Chemistry and Biotechnology of Fermentation (SSD CHIM/11), University of Pavia, Dept of Drug Sciences

2022: National habilitation as Full Professor of Chemistry and Biotechnology of Fermentation (SSD CHIM/11)

TEACHING ACTIVITIES (AA 2023/24)

Master Degrees

Industrial Biotechnologies (CFU 3, 24 h)

Industrial Bioprocesses for Drug Production (CFU 5, 40 h)

Laboratory of Drug Synthesis (CFU 4, 40 h)

Bachelor Degree

Integrated Laboratory of Pharmaceutical Biotechnologies – Biocatalysis (CFU 3, 36 h)

TUTORING & SUPERVISION OF BACHELOR, MASTER, AND PHD THESES

Tutoring Bachelor and Master students in Biotechnology, Advanced Biotechnology, Medical and Pharmaceutical Biotechnologies, Medicinal Chemistry and Pharmaceutical Technology on a regular basis

Tutor/co-tutor of 4 PhD students; external reviewer of PhD theses and member of PhD defence committees

ACADEMIC POSITIONS

2003-onwards: member of the “Commissione Trasferimenti” and “Commissione C.OR –Orientamento”, Dept of Drug Sciences, University of Pavia

2010-onwards: member of the Board of the II level Master in Progettazione e Sviluppo dei Farmaci, University of Pavia

2011-2013: member of the Board of the PhD School in Medicinal Chemistry and Pharmaceutical Technology, University of Pavia (cycles: XXVII-XXVIII)

2012-2016: member of the Board of the II level Master in Prodotti Nutraceutici: Progettazione, Sviluppo Formulativo, Controllo e Commercializzazione, University of Pavia

2011-2014: member of the Scientific Committee of the course Laboratorio di Comunicazione Scientifica Divulgativa, Collegio Nuovo – Fondazione Sandra e Enea Mattei, Pavia (appointed by the Dept. of Drug Sciences, University of Pavia)

2016-onwards: member of the Board of the PhD School in Biomolecular Sciences and Biotechnology, IUSS-Scuola Universitaria Superiore, Pavia (from cycle XXXII)

2019-onwards: Responsible (Coordinator) of the Biotechnology course (Bachelor degree, L2), University of Pavia

CURRENT RESEARCH ACTIVITIES

BIOCATALYSIS

Study and development of innovative and environmentally friendly chemoenzymatic routes based on biotransformations catalyzed by immobilized enzymes for the preparation of API, API intermediates, platform and commodity chemicals

BIOREFINERY – CIRCULAR ECONOMY

Study and development of green and sustainable biotechnological approaches (biocatalysis and fermentation) to the upcycling of byproducts and wastes from the (agro)industry (e.g. rice bran, cheese whey permeate, waste cooking oil) into high added value products for the nutraceutical, cosmetic, pharma, and biofuel sectors

VISITING STAYS ABROAD

1997-1999 (discontinuous stay, 10 months): University of Massachusetts Medical School and GLSynthesis Inc., Worcester (MA, USA). Supervisor: Prof. George E. Wright

RESEARCH GRANTS (2010-ONWARDS)

2023-2025: “Una bioraffineria integrata per la produzione sostenibile di biocarburanti ed emulsionanti da scarti agroindustriali” – REFINEMENT

Call: “Ecosistemi NODES Spoke 2 (PNRR) PoC Accademici”

Role: Participant (Responsible of the biocatalysis Working Unit)

2022-2025: Ecosistemi dell’innovazione “NODES -Nord Ovest Digitale E Sostenibile” (Codice progetto MUR: ECS00000036)

Call: PNRR Missione 4, Componente 2, Investimento 1.5, “Creazione e rafforzamento di “Ecosistemi dell’innovazione” costruzione di “leader Territoriali di R&S”

Role: Participant (Spoke 2, Green technologies and sustainable industries)

2021-2024: “Integrated platform for the sustainable production of bio-based surfactants from renewable resources (BioSurf)” (Rif. 2020-1094)

Call: Economia Circolare: ricerca per un futuro sostenibile 2020, Fondazione Cariplo

Role: Principal Investigator

2020-2023: “Approvvigionamento energetico e gestione della risorsa idrica nell’ottica dell’Economia Circolare” CE4WE – Circular Economy for Water and Energy (Rif. 1139857)

Call: Hub Ricerca e Innovazione, cofinanziata da POR FESR 2014-2020 ASSE1

Role: Participant

2018-2021: “BIOCOSM: biocatalysis for oils and fats in cosmetics” (Rif. 2017-0978)

Call: Bando congiunto ricerca integrata biotecnologie industriali e bioeconomia2017, Fondazione Cariplo e Innovhub-SSI

Role: Responsible of the Working Unit Consorzio Italbiotec, including the University of Pavia

2017-2019: “BIOFLOW: an innovative platform for the in-flow biocatalytic preparation of high value chemicals” (Rif. 2016-0731)

Call: Ricerca integrata biotecnologie industriali 2016, Fondazione Cariplo

Role: Participant

2015-2017: “Quality wine meter” (Rif. n. F/0010/01-03/X26)

Call: Progetti di ricerca e sviluppo negli ambiti tecnologici identificati dal Programma Quadro comunitario Horizon 2020, Fondo per la Crescita Sostenibile (D.M. 20 giugno 2013)

Role: Participant

2014-2017: “From waste to resource: an integrated valorization of the rice productive chain residues” (RiceRes, Rif. 2014-0558)

Call: Ricerca integrata biotecnologie industriali 2014, Fondazione Cariplo

Role: Responsible of the Working Unit University of Pavia

2011-2013: “From ancient crops materials and products for the future” (VeLiCa, Rif. 14493A)

Call: Fondo per la promozione di Accordi Istituzionali (21 giugno 2010), Regione Lombardia

Role: Participant

2010-2012: “A biotechnological approach for the rational design of vaccines: a novel vaccine against TB” (VATUB)

Call: Realizzazione di iniziative finalizzate ad incrementare l’attrattività del territorio lombardo, la valorizzazione del capitale umano e la cooperazione scientifica (11 giugno 2009), Regione Lombardia

Role: Participant

2010-2012: “Poli(γ -glutamate) (γ -PGA): a biocompatible and biodegradable material for the immobilization of biologically active molecules”

Call: Promuovere la ricerca d’eccellenza 2010/2011, Fondazione Alma Mater Ticinensis

Role: Participant

2010-2012: “Poli(γ -glutamate): bioproduction of an ecofriendly biopolymer and its derivatization thereof for the active packaging of foods”

Call: Presentazione di proposte per la sperimentazione di iniziative di promozione, sviluppo, valorizzazione della ricerca e del capitale umano con ricaduta diretta sul territorio Lombardo 2009, INSTM (Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali) e Regione Lombardia

Role: Participant

PEER REVIEW OUTPUT & BIBLIOMETRIC DATA (SCOPUS)

Peer reviewed publications: **70**

Book chapter: **1**

Patent application: **1**

Poster/oral communications in national and international conferences: **>70**

Scopus (last update 07/04/24)

Documents: **69**

Citations: **1453**

h-index: **24**

PUBLICATIONS (ORIGINAL ARTICLES & REVIEWS, LAST 5 YEARS: 2019-2023)

22) Crotti M., Robescu M.S., Bolivar J.M., **Ubiali D.**, Wilson L., Contente M.L.* (2023) **What’s new in flow biocatalysis? A snapshot of 2020–2022.** FRONTIERS IN CATALYSIS in press. DOI: 10.3389/fctls.2023.1154452

21) Semproli R., Chanquia S.N., Bittner J.P., Müller S., Domínguez de María P., Kara S.*, **Ubiali D.*** (2023) **Deep Eutectic Solvents for the enzymatic synthesis of sugar esters: A generalizable strategy?** ACS SUSTAINABLE CHEMISTRY AND ENGINEERING in press. DOI: 10.1021/acssuschemeng.2c07607

- 20)** Robescu M.S.,* Alcántara A.R., Calvio C., Morelli C.F., Speranza G., **Ubiali D.**, Bavaro T.* (2023) **L-Theanine goes greener: A highly efficient bioprocess catalyzed by the immobilized γ -glutamyl transferase from *Bacillus subtilis*.** CHEMSUSCHEM in press. DOI: 10.1002/cssc.202202108
- 19)** Semproli R., Robescu M.S., Sangiorgio S., Pargoletti E., Bavaro T., Rabuffetti M., Cappelletti G., Speranza G.,* **Ubiali D.*** (2023) **From lactose to alkyl galactoside fatty acid esters as non-ionic biosurfactants: A two-step enzymatic approach to cheese whey valorization.** CHEMPLUSCHEM Vol. 88 (1) Article number e202200331. DOI: 10.1002/cplu.202200331
- 18)** Robescu M.S., Annunziata F., Somma V., Calvio C., Morelli C.F., Speranza G., Tamborini L., **Ubiali D.**, Pinto A.*, Bavaro T.* (2022) **From batch to continuous flow bioprocessing: Use of an immobilized γ -glutamyl transferase from *B. subtilis* for the synthesis of biologically active peptide derivatives.** JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY p. 13692-13699 Vol. 70 (42). DOI: 10.1021/acs.jafc.2c03702
- 17)** Sangiorgio S., Vidović N., Boschini G., Aiello G., Arcidiaco P., Arnoldi A., Morelli C.F., Rabuffetti M., Recca T., Scarabattoli L., **Ubiali D.**, Speranza G.* (2022) **Preparation, characterization and in vitro stability of a novel ACE-inhibitory peptide from soybean protein.** FOODS Vol. 11(17) Article number 2667. DOI: 10.3390/foods11172667
- 16)** Sangiorgio S., Cambò M., Semproli R., **Ubiali D.**, Speranza G., Rabuffetti M.* (2022) **2-O-Acetyl-3,4,5,6-tetra-O-benzyl-D-myo-inosityl diphenylphosphate: A new useful intermediate to inositol phosphate and phospholipids.** CHIRALITY p. 1038-1043 Vol. 34 (8). DOI: 10.1002/chir.23457
- 15)** Donzella S.,* Fumagalli A., Arioli S., Pellegrino L., D'Incecco P., Molinari F., Speranza G., **Ubiali D.**, Robescu M.S., Compagno C. (2022) **Recycling food waste and saving water: Optimization of the fermentation processes from cheese whey permeate to yeast oil.** FERMENTATION Vol. 8 (7) Article number 341. DOI: 10.3390/fermentation8070341
- 14)** Sangiorgio S., Pargoletti E., Rabuffetti M., Robescu M.S., Semproli S., **Ubiali D.**, Cappelletti G.,* Speranza G.* (2022) **Emulsifying properties of sugar-based surfactants prepared by chemoenzymatic synthesis.** COLLOIDS AND INTERFACE SCIENCE COMMUNICATIONS Vol. 48 Article number 100630. DOI: 10.1016/j.colcom.2022.100630
- 13)** Bavaro T.,* Tengattini S., Rezwan R., Chiesa E., Temporini C., Dorati R., Massolini G., Conti B., **Ubiali D.**, Terreni M. (2021) **Design of epidermal growth factor immobilization on 3D biocompatible scaffolds to promote tissue repair and regeneration.** SCIENTIFIC REPORTS Vol. 11 (1) Article number 2629. DOI: 10.1038/s41598-021-81905-1
- 12)** Semproli R., Robescu Marina S., Cambò M., Mema K., Bavaro T., Rabuffetti M., **Ubiali D.**,* Speranza G.* (2021) **Chemical and enzymatic approaches to esters of *sn*-glycero-3-phosphoric acid.** EUROPEAN JOURNAL OF ORGANIC CHEMISTRY p. 4027-40376 Vol. 2021 (29). DOI: 10.1002/ejoc.202100235
- 11)** Rabuffetti M., Rinaldi F., Lo Bianco A., Speranza G., **Ubiali D.**, de Moraes M.C., Rodrigues Pereira da Silva L.C., Massolini G., Calleri E.*, Lavecchia A.* (2021) **Discovery of a novel inhibitor of human purine nucleoside phosphorylase by a simple hydrophilic interaction liquid chromatography enzymatic assay.** CHEMMEDCHEM p. 1325–1334 Vol. 16 (8). DOI: 10.1002/cmdc.202000874
- 10)** Bavaro T., Benucci I., Pedrali A., Marrubini G., Esti M., Terreni M., Massolini G., **Ubiali D.*** (2020) **Lipase-mediated hydrolysis of hempseed oil in a packed-bed reactor and in-line purification of PUFA as mono- and diacylglycerols.** FOOD AND BIOPRODUCTS PROCESSING p. 345-353 Vol. 123. DOI: 10.1016/j.fbp.2020.07.009

09) Overturf E., Ravasio N.*, Zaccheria F., Tonin C., Patrucco A., Bertini F., Canetti M., Avramidou K., Speranza G., Bavaro T., **Ubiali D.** (2020) **Towards a more sustainable circular bioeconomy. Innovative approaches to rice residue valorization: The RiceRes case study.** BIORESOURCE TECHNOLOGY REPORTS Article number 100427 Vol. 11. DOI: 10.1016/J.BITEB.2020.100427

08) Semproli R., Vaccaro G., Ferrandi E.E., Vanoni M., Bavaro T., Marrubini G., Annunziata F., Conti P., Speranza G., Monti D.*, Tamborini L.*, **Ubiali D.*** (2020) **Use of immobilized amine transaminase from *Vibrio fluvialis* under flow conditions for the synthesis of (S)-1-(5-fluoropyrimidin-2-yl)-ethanamine.** CHEMCATCHEM p. 1359-1367 Vol. 12 (5). DOI: 10.1002/cctc.201902080

07) Dugheri S.,* Mucci N., Bonari A., Marrubini G., Cappelli G., **Ubiali D.**, Campagna M., Montalti M., Arcangeli G. (2020) **Solid phase microextraction techniques used for gas chromatography: A review.** ACTA CHROMATOGRAPHICA p. 1-9 Vol. 32 (1). DOI: 10.1556/1326.2018.00579

06) Tamborini L.,* Previtali C., Annunziata F., Bavaro T., Terreni M., Calleri E., Rinaldi F., Pinto A., Speranza G., **Ubiali D.,*** Conti P. (2020) **An enzymatic flow-based preparative route to vidarabine.** MOLECULES Vol. 25 (5) Article number 25051223. DOI: 10.3390/molecules25051223

05) Tentori F., Bavaro T., Brenna E.,* Colombo D., Monti D., Semproli R., **Ubiali D.*** (2020) **Immobilization of old yellow enzymes via covalent or coordination bonds.** CATALYSTS Vol. 10 (2) Article number 260. DOI: 10.3390/catal10020260

04) Bruni M., Robescu M.S., **Ubiali D.**, Marrubini G., Vanna R., Morasso C., Benucci I., Speranza G., Bavaro T.* (2020) **Immobilization of γ -glutamyl transpeptidase from equine kidney for the synthesis of kokumi compounds.** CHEMCATCHEM p. 210-218 Vol. 12 (1). DOI: 10.1002/cctc.201901464

03) Robescu M.S., Serra I.,* Terreni M., **Ubiali D.,*** Bavaro T. (2020) **A multi-enzymatic cascade reaction for the synthesis of vidarabine 5'-monophosphate.** CATALYSTS Vol. 10 (1) Article number 60. DOI: 10.3390/catal10010060

02) Dugheri S.,* Mucci N., Bonari A., Marrubini G., Cappelli G., **Ubiali D.**, Campagna M., Montalti M., Arcangeli G. (2020) **Liquid phase microextraction techniques combined with chromatography analysis: a review.** ACTA CHROMATOGRAPHICA p. 69-79 Vol. 32 (2). DOI: 10.1556/1326.2019.00636

01) Rabuffetti M., Bavaro T., Semproli R., Cattaneo G., Massone M., Morelli C.F., Speranza G.,* **Ubiali D.*** (2019) **Synthesis of Ribavirin, Tecadenoson, and Cladribine by enzymatic transglycosylation.** CATALYSTS p. 355 Vol. 9 (4). DOI: 10.3390/catal9040355

PATENTS

Pregolato M., Terreni M., **Ubiali D.**, Bavaro T. (2008). **2',3'-Di-O-acyl-5-fluoronucleosides.** WO 2008/107771 A2

MEMBER OF SCIENTIFIC & ORGANIZING COMMITTEES (2011-ONWARDS)

2011-2016: "Italian Forum on Industrial Biotechnology and Bioeconomy" (IFIB), formerly "Italian Industrial Biotechnology" (IIB). Workshop co-organized by Assobiotec, SPRING (Italian Cluster of Circular Bioeconomy), Innovhub-IIS. Member of the Scientific Committee (2011-2013) and the Organizing Committee (2011-2015)

2015: "Ricerche applicate in ambito biotecnologico e farmaceutico", Pavia, (Italy). Workshop organized by the University of Pavia. Co-organizer and speaker

2015: "Industrial enzymes", Pavia (Italy). International conference co-organized by Acib (Austrian Centre of Industrial Biotechnology) and the University of Pavia. Member of the Organizing Committee

2017: “Professione biotecnologo: formazione, prospettive, opportunità”, Pavia (Italy). Roundtable co-organized by the Dept of Biology and Biotechnology and Collegio Nuovo Fondazione Sandra e Enea Mattei. Co-organizer and chair

2017: “*Bioeconomy dialogues: Progetti green dal territorio e oltre*”, Pavia (Italy). Workshop co-organized by the Cluster Lombardy Green Chemistry Association and the University of Pavia. Co-organizer and chair

2018: EMBO workshop “Enzymes, biocatalysis and chemical biology: The new frontiers”, Pavia (Italy). Member of the Organizing Committee and chair

2021: “6th International Conference on Biocatalysis in Non-Conventional Media (BNCM2021)”, Milano (Italy), virtual conference. Member of the Scientific and Organizing Committees, and chair

2021: “Bioeconomy school: from basic science to a new economy”, Como (Italy), virtual event. School co-Director, member of the Scientific Committee and invited speaker

2021: “La “nuova alleanza”: green deal e tradizione alimentare italiana”, Pavia (Italy). Webinar co-organized in collaboration with the University of Milano Bicocca and Festival dello Sviluppo Sostenibile ASVIS with the support of Fondazione Cariplo. Co-organizer, chair, speaker

2023: “*Bioeconomy dialogues: Progetti green dal territorio e oltre*”, Pavia (Italy). Workshop co-organized by the Cluster Lombardy Green Chemistry Association and the University of Pavia with the support of NODES-SPOKE 2. Co-organizer and chair

2023: “The bioeconomy transformation: science, economics, business and society”, Como (Italy). School co-Director, member of the Scientific and Organizing Committees, chair and speaker

2024: “Sustainability and the food chain: new actors stepping into the limelight”, Como (Italy). Member of the Organizing Committee and speaker

2024: “Biocat4Value – Biocatalysis conference for biological transformation along renewable value chains”, Düsseldorf (Germany). Member of the Scientific and Organizing Committees

GUEST EDITOR, AD HOC REVIEWER, INVITED EXPERT (2009-ONWARDS)

2009-onwards: ad hoc referee for JOURNAL OF MOLECULAR CATALYSIS B: ENZYMATIC; FEMS MICROBIOLOGY LETTERS; PROCESS BIOCHEMISTRY; SYNTHESIS; APPLIED CLAY SCIENCES; MOLECULES; ADVANCED SYNTHESIS AND CATALYSIS; JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE; CATALYSIS COMMUNICATION; BIOCATALYSIS & BIOTRANSFORMATION; MOLECULAR CATALYSIS; CHEMCATCHEM; BIOPROCESS AND BIOSYSTEMS ENGINEERING; COMPUTATIONAL AND STRUCTURAL BIOTECHNOLOGY JOURNAL; BIOCHIMICA BIOPHYSICA ACTA – PROTEINS AND PROTEOMICS; ENZYME MICROBIAL TECHNOLOGY; BEILSTEIN JOURNAL OF ORGANIC CHEMISTRY; CHIRALITY; ANALYTICAL CHEMISTRY

2015-2017: Deal Line-Up BioItaly Investment Forum, Intesa Sanpaolo StartUp Initiative, Milano (Italy). Invited expert for the assessment of the most innovative projects and start-ups in the Green/White Biotechnology sector

2016-2019: Lombardy Green Chemistry Association, Milano (Italy). Member of the Advisory Board and Representative of the Lombardy Universities and Research Centers

2018-2019: co-guest editor for CATALYSTS, special issue “Immobilization of enzymes”. Articles published: 23

2021-2023: co-guest editor for CATALYSTS, special issue: “Biocatalysis in non-conventional media”. Articles published: 3

2022-2023: co-guest editor for FRONTIERS IN CATALYSIS, special issue: “Flow biocatalysis as a powerful tool in sustainable and efficient organic synthesis”. Articles published: 3

Pavia, April 7th 2024

Daniela Ubiali, Ph.D

Associate Professor of Chemistry and Biotechnology of Fermentation